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(1) Claims 40, 42-50, and 53 are pending in the present application. Claims 1-39, 51, 52, and 54-67 were previously cancelled and Applicant has cancelled Claim 41 herein. Applicant has amended Claims 40, 42, and 53 herein, but no new matter has been added.

(2) The Office Action cited the following references:

- A. U. S. Patent 5,527,647, by Doi, *et al.*, entitled *Phase Shift Mask And Its Manufacturing Method* (referred to as "Doi" hereinafter);
- B. U. S. Patent 5,939,225, by Dove, *et al.*, entitled *Thin Film Materials For The Preparation Of Attenuating Phase Shift Masks* (referred to as "Dove" hereinafter);
- C. U. S. Patent 6,242,138, by Mitsui, *et al.*, entitled *Phase Shift Mask And Phase Shift Mask Blank* (referred to as "Mitsui" hereinafter);
- D. U. S. Patent 6,274,281, by Chen, entitled *Using Different Transmittance With Attenuate Phase Shift Mask (APSM) To Compensate ADI Critical Dimension Proximity* (referred to as "Chen" hereinafter);
- E. U. S. Patent 6,524,755, by Jin, *et al.*, entitled *Phase-Shift Masks And Methods Of Fabrication* (referred to as "Jin" hereinafter);
- F. U. S. Patent 6,677,107, by Hasegawa, *et al.*, entitled *Method For Manufacturing Semiconductor Integrated Circuit Device, Optical Mask Used Therefor, Method For Manufacturing The Same, And Mask Blanks Used Therefor* (referred to as "Hasegawa" hereinafter);
- G. U. S. Patent Publication 2003/0184721, by Itoh, entitled *Mask Substrate And Its Manufacturing Method* (referred to as "Itoh" hereinafter); and
- H. U. S. Patent Publication 2002/0022184, by Tanaka, *et al.* entitled *Method of Manufacturing a Photomask* (referred to as "Tanaka" hereinafter).

(3) The Examiner objected to asserted informalities in the specification, and the Examiner asserted that appropriate correction is required. Applicant thanks the Examiner for such a careful review of the specification. But, Applicant respectfully submits that such asserted informalities are not substantive and no further correction is necessary.

(4) The Examiner also objected to Claims 40-50 and 53 for non-substantive informalities. Applicant thanks the Examiner for such a careful review of the claims. Applicant has amended claims 40 and 53 to place the claims in better form, but not for reasons of patentability.

(5) Claims 41 and 53 have been rejected under 35 U.S.C. § 112, first paragraph. Applicant has cancelled Claim 41 herein. Applicant has amended Claim 53 herein to state that "the second wavelength is smaller than the first wavelength." This is clearly supported by the specification at paragraphs [0006] through [0008], paragraph [0028], and original claims 33 and 38. For example, original claims 33 and 38 both included the limitation that "the second wavelength is smaller than the first wavelength."

(6) Claims 40-50 and 53 have been rejected under 35 U.S.C. § 112, second paragraph, as assertedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Again, Applicant thanks the Examiner for such a careful review of the claims. Applicant has amended Claims 40 and 53 to correct the typographical error of stating "transparent" rather than "transparent layer." Regarding Claims 42 and 53, Applicant respectfully notes that there is no " λ_1 " in Claims 42 and 53. Perhaps the Examiner's copy of the currently pending claims is illegible due to scanning. All occurrences of lambda in Claims 42 and 53 as currently pending are " λ ". Applicant amended Claims 42 and 53 to make the claims more clear.

(7) Claims 40-41 and 44-50 were rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Doi in view of Tanaka and either Hasegawa or Itoh, further in view of either Dove or Mitsui, and further in view of Chen. Claims 42-43 and 53 were rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Doi in view of Tanaka and either Hasegawa or Itoh, further in view of either Dove or Mitsui, further in view of Chen, and further in view of Jin. Applicant respectfully traverses these rejections for the following reasons.

Claims 40-50

Claim 41 has been cancelled herein. Regarding Claims 40 and 42-50, Applicant respectfully submits that the Examiner is grasping for elements and limitations anywhere he can find them (seven references in this case) to build an obviousness rejection against Claim 40 in hindsight of Applicant's disclosure. But, the Examiner still has not asserted a *prima facie* case of obviousness, as required by the MPEP and the patent rules. Regarding a *prima facie* case of obviousness, MPEP 2143 (8th ed., rev. Aug. 2006) states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

There is no suggestion or motivation to combine all of the cited references found in the prior art. And when carefully and closely studying all of the cited references combined, there is no teaching or suggestion of all of the claim limitations combined. The invention of Claim 40 cannot be gleaned from reading the cited references alone or in any combination. Claim 40 presents a unique solution to problems that are never raised in the cited references.

The Background section at paragraphs [0005] and [0006] of the patent application discusses the problems noticed by the inventors:

[B]ecause the makers of such mask blanks 20 often supply numerous companies, they are often relatively slow to change with the progression of one or two companies until there is demand from a majority of companies supplied. Often, it may be more profitable to implement new mask blanks only when the majority of companies are ready for them. Hence, if one company is ahead of or leads its competitors and is ready for the next generation mask blanks sooner, the mask blank supplier may not keep up. Or if the mask blank supplier does strive to keep up with a leading fabricator, this may be a disadvantage to the leading fabricator because the next generation mask blanks will then be readily available to all of its competitors. Thus, a need exists for a way to continue using a current

generation of mask blanks provided by a mask blank supplier while still being able to push into the next generation of fabrication processes.

In the case where a mask blank supplier cannot affordably mass produce next generation mask blanks soon enough for a leading fabricator, which is ready for them, the slower pace of competing fabricators may slow the progression of the leading fabricator. This may be especially true if the leading fabricator is dependent upon the mask blank supplier for providing its mask blanks. For example, most of the industry may be using 193 nm light for lithography and a leading company may be ready to use 157 nm light to provide smaller geometries. In such case, the leading company will not want to wait for its competitors to catch up. Thus, it would be highly desirable for the leading fabricator to have the ability to use readily available mask blanks designed for the current generation processes in its next generation fabrication processes.

The inventors came up with a unique solution to these problems with the invention of Claim 40. The cited references, either alone or in combination, do not teach, suggest, or motivate "obtaining a prefabricated mask blank designed for use with light of a first wavelength, wherein the prefabricated mask blank was made by a first company," "wherein the prefabricated mask blank is adapted for etching clear areas into the attPS layer and stopping the etching of clear areas at the transparent layer so that the initial attPS-layer thickness and the clear area without attPS layer material thereat will provide a first predetermined phase shift and a first predetermined transmittance for light of the first wavelength," and then "patterning and adapting the prefabricated mask blank to be an adapted-patterned mask for use with light of a second wavelength," "wherein the patterning and adapting is performed by a second company, the second company being different than the first company," and where the patterning and adapting includes "reducing the attPS-layer thickness of the attPS layer to a first attPS-layer thickness at the dark areas," and "patterning and etching the attPS layer to form the clear areas, wherein the attPS layer remains with a second attPS-layer thickness at the clear areas, the second attPS-layer thickness being smaller than the first attPS-layer thickness, wherein the transparent layer has a same thickness at the clear areas and the dark areas," as Claim 40 requires.

The Examiner states that Doi does not teach "[I] that the initial thickness of the attPS layer before thinning would be suitable for a first wavelength and that the thinning would make it suitable for a second wavelength that is shorter than the first wavelength," and Applicant agrees. There is no mention, further, of providing the unique solution that Claim 40, which provides for

making use of prefabricated mask blanks (designed for a first wavelength) by adapting the mask blanks for use with newer generation geometries (adapting for a second smaller wavelength).

The Examiner states that Doi does not teach “[2] that a part of the attPS layer with a second thickness remains at the clear areas of the attenuated PSM,” and Applicant also agrees with this. In Doi, the *transparent layer is etched at the clear areas* to reduce its thickness relative to the dark areas. In contrast, Claim 40 requires that the *transparent layer is not thinned* during the formation of the adapted-patterned mask for use with light of a second wavelength. Doi actually *teaches away* from the invention of Claim 40. Thus, Doi is not even relevant here as a base for building this rejection. A house built on a faulty foundation cannot stand. This alone should end the consideration of using Doi against Claim 40. How can there be any teaching or suggestion to combine the cited references with Doi when Doi *teaches away* from the invention of Claim 40?

Tanaka is the only newly cited reference in the current rejections. Applicant respectfully submits that Tanaka is not even relevant to the invention of Claim 40 either, and actually *teaches away* from the invention of Claim 40. The Examiner has taken the disclosure in Tanaka regarding the *thinning of a mask blank* completely out of context. Tanaka discusses ways to reclaim or recycle used, defective, and contaminated masks to create new mask blanks. After a mask is found to be unusable due to defects or contamination, Tanaka teaches the complete removal of the shadowing film (dark areas) down to the transparent quartz substrate. And then, a new shadowing film is formed on the same transparent quartz substrate. The only *thinning* discussed in Tanaka is the thinning of the transparent quartz substrate while completely removing the shadowing film. Thus, Tanaka actually *teaches away* from the invention of Claim 40, which requires that the *transparent layer is not thinned* during the formation of the adapted-patterned mask for use with light of a second wavelength. A careful reading of Tanaka will reveal that the Examiner is using quotes from Tanaka out of context. Doi and Tanaka both *teach away* from the invention of Claim 40 because they both teach *thinning of the transparent layer*. Therefore, Tanaka does not provide a missing link in forming a *prima facie* case of obvious against Claim 40, either alone or in combination with the other cited references.

Applicant asserts that Claim 40 is patentable over the cited references. Because Claims 42-50 depend from independent Claim 40, Claims 42-50 are also patentable over the cited references for at least the same reasons discussed above regarding Claim 40.

Claim 53

Claim 53 is also patentable over the cited references for at least the same reasons discussed above regarding Claim 40. Thus, Claims 40, 42-50, and 53 are patentable over the cited references and are in condition for allowance.

(8) In view of the above, Applicant respectfully submits that the application is in condition for allowance and requests that the case be passed to issuance. If the Examiner should have any questions, Applicant requests that the Examiner contact Applicant's attorney at the address below. No fee is believed to be due at this time. In the event that there are any fees due herein to keep the application pending, other than an issue fee, please charge the same, or credit any overpayment, to Deposit Account No. 50-1065.

Respectfully submitted,



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